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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/689,727	10/22/2003	Hiroshi Furukawa	U2054.0144	3992

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EXAMINER

DOAN, KIET M

ART UNIT PAPER NUMBER

2683

DATE MAILED: 08/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/689,727

Applicant(s)

FURUKAWA ET AL.

Examiner

Kiet Doan

Art Unit

2683

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 October 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-84 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7, 36, 38-41, 43-45-47-50 and 78-84 is/are rejected.
- 7) ☒ Claim(s) 6, 8-35, 37, 42 and 51-77 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 10/22/03, 05/06/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Regarding **claim 3, 36, 39, 45 and 78**, the phrase " a kind of " renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 38, 43, 49-50, 78, 80-84 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamane (Patent No. 5,842,131) in view of Lee et al. (Patent No. 6,553,233).

Consider **claims 1, 38, 43, 81, 83 and 84**, Yamane teaches a base-station cell design method adapted so that, in cell designing base-station installment in a mobile communication system, a plurality of base-station candidate locations are given within a service area to locate base station in anyone of these base-station candidate locations (Abstract, C1, L50-65, C2, L55-65, Fig.1, Illustrate cell design which read on area A, B and C wherein contain plurality of base station and moving terminal is position in anyone of these base-station candidate locations). Yamane teaches the limitation of

Art Unit: 2683

claim as discuss **but fail to teach** said base-station cell design method comprising the steps of: an objective-function calculation step of calculating a predetermined objective-function responding to a traffic absorption quantity and (or) a communication quality value of said base-station candidate locations; and a base-station layout decision step of deciding a layout at which the base station is installed responding to this objective-function.

In an analogous art, Lee teaches "Method for calculating an optimal number of BTSS in a wireless network and determining a loading factor value therefor". Further, Lee teaches said base-station cell design method comprising the steps of: an objective-function calculation step of calculating a predetermined objective-function responding to a traffic absorption quantity and (or) a communication quality value of said base-station candidate locations; and a base-station layout decision step of deciding a layout at which the base station is installed responding to this objective-function (Abstract, C3, L23-48, C4, L13-60, Fig.4, Illustrate as objective-function calculation step).

Therefore, it would have been obvious at the time that the invention was made that person having ordinary skill in the art to modify Yamane and Lee system, such that plurality of base-station candidate locations are given within a service area to locate base station in anyone of these base-station candidate locations, an objective-function calculation step of calculating a predetermined objective-function responding to a traffic absorption quantity and a base-station layout decision step of deciding a layout at which the base station is installed responding to this objective-function, to provide means for

calculating the signal/power of base station for secure the users of continue communication.

Consider **claims 2, 44, 50** Lee teaches the base-station cell design method according to claim 1, said base-station cell design method characterized in being adapted so that: in said objective-function calculation step, the higher said quantity and (or) quality are, the higher objective-function is given; and in said base-station layout decision step, a location of which said objective-function is highest is decided (C3, L23-48, C5, L48-58).

Consider **claims 3, 36, 39, 45 and 78**, Lee teaches the base-station cell design method according to claim 1, said base-station cell design method characterized in that said objective-function is given as a function of the base-station candidate location, the channel, a kind of antennas to be used, and its installment direction (C1, L50-67, C2, L1-3, wherein base station is inherently contain antennas).

Consider **claim 49**. Lee teaches the program according to claim 48, said program characterized in that said base-station layout decision step including: a step of calculating a traffic absorption quantity and (or) a communication quality value in each of said base-station candidate locations; an objective-function calculation step of calculating a predetermined objective-function responding to the quantity and (or) the value that are this calculated result; and a step of selecting the layout at which the base

Art Unit: 2683

station is installed responding to this objective-function (Abstract, C3, L23-48, C4, L13-60, Fig.4, Illustrate as objective-function calculation step).

2. Claims 7, 41 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamane (Patent No. 5,842,131) in view of Sakoda et al. (Patent No. 6,021,125).

Consider **claims 7, 41 and 48**, Yamane teaches a base-station cell design method in a mobile communication system, wherein a service area, and a traffic density distribution within this service area are given to locate base stations within the above service area (Abstract, C1, L50-65, C2, L55-65). Yamane teaches the limitation of claim as discuss **but fail to teach** said base-station cell design method characterized in including a base-station layout decision step of sequentially deciding until traffic coverage ratio exceeds desired traffic coverage ratio and said traffic coverage ratio is defined as a rate of a total traffic quantity absorbed by the base stations to all the traffic quantity that occurs within said service area.

In an analogous art, Sakoda teaches "Cellular wireless communications system and base station". Further, Sakoda teaches said base-station cell design method characterized in including a base-station layout decision step of sequentially deciding until traffic coverage ratio exceeds desired traffic coverage ratio and said traffic coverage ratio is defined as a rate of a total traffic quantity absorbed by the base stations to all the traffic quantity that occurs within said service area (C4, L61-67, C5, L1-10, L35-52).

Therefore, it would have been obvious at the time that the invention was made that person having ordinary skill in the art to modify Yamane and Sakoda system, such that traffic density distribution within this service area are given to locate base stations within the above service area and traffic coverage ratio is defined as a rate of a total traffic quantity absorbed by the base stations to all the traffic quantity that occurs within said service area, to provide means for transmitting signals in quality/quantity within service area.

3. **Claims 4, 46 and 79** are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamane (Patent No. 5,842,131) in view of Lee et al. (Patent No. 6,553,233) and further view of Persson et al. (Pub. No. 2003/0203723).

Consider **claims 4, 46 and 79** Yamane and Hamabe teach the limitation of claim as discuss above but fail to teach the base-station cell design method according to claim 1, said base-station cell design method characterized in being adapt so that said objective-function calculation steps are perform in parallel.

In an analogous art, Persson teaches "Estimating power on spatial channels". Further, Persson teaches the limitation of claim as discuss above but fail to teach the base-station cell design method according to claim 1, said base-station cell design method characterized in being adapt so that said objective-function calculation steps are perform in parallel (Page 3, Paragraphs [0045], teach calculating power in parallel)

Therefore, it would have been obvious at the time that the invention was made that person having ordinary skill in the art to modify Yamane, Hamabe and Persson

Art Unit: 2683

system, such that objective-function calculation steps are performed in parallel, to provide means for the system can be computed independent at each base station.

4. **Claims 5, 40 and 47** are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamane (Patent No. 5,842,131) in view of Persson et al. (Pub. No. 2003/0203723).

Consider claims 5, 40 and 47, Yamane teaches a base-station cell design method adapted so that, in cell designing in a mobile communication system, a plurality of base-station candidate locations are given within a service area to decide any one of these base-station candidate locations as a base-station layout while a radio-wave propagation characteristic estimation technique is used (C1, L50-65, C2, L55-65). Yamane teaches the limitation of claim as discussed **but fail to teach** said base-station cell design method comprising the steps of: as a radio-wave propagation characteristic estimation technique within said service area with each of said base-station candidate locations taken as a transmission point, using a first radio-wave propagation characteristic estimation technique having a first precision; and as a radio-wave propagation characteristic estimation technique within said service area with a base-station location after a case where said base station was decided taken as a transmission point, using a second radio-wave propagation characteristic estimation technique having a precision higher than said first precision.

Persson teaches said base-station cell design method comprising the steps of: as a radio-wave propagation characteristic estimation technique within said service area with each of said base-station candidate locations taken as a transmission point, using

a first radio-wave propagation characteristic estimation technique having a first precision; and as a radio-wave propagation characteristic estimation technique within said service area with a base-station location after a case where said base station was decided taken as a transmission point, using a second radio-wave propagation characteristic estimation technique having a precision higher than said first precision (Abstract, Page 1, Paragraphs [0008], [0014-0017], Fig.1, Illustrate first/second power estimate which means as radio-wave propagation characteristic estimation technique).

Therefore, it would have been obvious at the time that the invention was made that person having ordinary skill in the art to modify Yamane and Persson system, such that a plurality of base-station candidate locations are given within a service area to decide anyone of these base-station candidate locations as a base-station and a radio-wave propagation characteristic estimation technique within said service area, to provide means for accurate knowing distance of each base station candidate location.

Allowable Subject Matter

5. **Claims 6, 8-37, 42, 51-77**, are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Consider **claims 6 and 70-71**, the prior art record Persson et al ((Pub. No. 2003/0203723) teach the base station design method according to claim 5, said base

Art Unit: 2683

station cell design method characterized in: as said first radio-wave propagation characteristic estimate technique (Abstract, Page 1, Paragraphs [0015-0017] teach estimate signals/burst at base station).

However, Persson fail to teach employing a technique that an electric power attenuates in proportional to an exponential power of a distance; and as said second radio-wave proportional characteristic estimate technique employing a ray tracing technique, as substantially connect and specific detail and combination.

Consider **claim 8**, the prior art record Lee et al. (Patent No. 6,553,233) teach the base-station cell design method according to claim 7, said base-station cell design method characterized in that said base-station layout decision step comprises (C3, L23-48 teach the calculate the base station).

However, Lee fail to teaches a step of calculating a traffic absorption quantity and (or) a communication quality value in each of candidate locations of said base station; an objective-function calculation step of calculating a predetermined objective-function responding to the quantity and (or) the value that are this calculated result; and a step of selecting a layout at which the base station is installed responding to this objective-function, as substantially connect and specific detail and combination.

Claims 19-29 and 36-37 are allowed as being dependent on the claim 8.

Consider **claims 10 and 51**, the prior art record Persson at al (Pub. No. 2003/0203723) teach the base-station cell design method according to claim 9, said base-station cell design method characterized in being adapted so that: a first radio-

wave propagation characteristic estimation technique having a first estimation precision is employed for estimating a radio-wave propagation characteristic within said service area for the candidate location of base station taken as a transmission point (Page 1, Paragraph [0008], [0014-0017]).

However, Persson fail to teach and a second radio-wave propagation characteristic estimation technique having an estimation precision higher than said first estimation precision is employed for estimating a radio-wave propagation characteristic within said service area for the decided location of base station taken as a transmission point as substantially connect and specific detail and combination.

Claims 11-18 and 32-34 are allowed as being dependent on the claim 10.

Claims 52-69 are allowed as being dependent on the claim 51.

Consider **claims 30-31 and 72-73**, the combine of Yamane, Lee, Persson and Sakota are failed to teach the base-station cell design method according to one of claim 7, said base-station cell design method characterized in that no location within the service area in which no traffic occurs is included in said candidate location/no location in which the base station is physically impossible to arrange is included in said candidate location as substantially connect and specific detail and combination.

Consider **claims 35 and 77**, the prior art record Lee at el. (Patent No. 6,553,233) teach the base-station cell design method according to claim 7, said base-station cell design method characterized in: with regard to a first service area, executing said base-

Art Unit: 2683

station layout decision step; and afterward, with regard to a second service area that is partially overlapped with said first service area (Fig. 1, Illustrate base station No. 10, No. 11 and No. 12 wherein overlapped with said first service area).

However, Lee fail to teach executing said base-station installment step for the base-station candidate location other than the base station for which installment was decided in said first service area as substantially connect and specific detail and combination.

Consider **claim 42** the combine of Yamane, Lee, Persson and Sakota are failed to teach the base-station cell design apparatus according to claim 41, said base-station cell design apparatus characterized in further including deletion base-station decision means for sequentially deleting said base stations for which installment was decided until said traffic coverage ratio satisfies a desired traffic coverage ratio as substantially connect and specific detail and combination.

Consider **claim 74**, the combine Yamane, Lee, Persson and Sakota are failed to teach the program according to claim 48, said program characterized in that said candidate location is seasoned with information relating to a direction of the base station as well for setting as substantially connect and specific detail and combination.

Consider **claim 75**, the combine of Yamane, Lee, Persson and Sakota are failed to teach the program according to claim 48, said program characterized in, in the event that said candidate location was pre-given priority, as said objective-function, using a

Art Unit: 2683

new objective-function having the above priority considered for this objective-function as substantially connect and specific detail and combination.

Consider **claim 76**, the combine of Yamane, Lee, Persson and Sakota are failed to teach the program according to claim 50, said program characterized in being adapted so that said objective-function is varied in the event that said objective-function has an identical value in different candidate locations or channels as well as substantially connect and specific detail and combination.

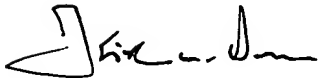
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kiet Doan whose telephone number is 571-272-7863. The examiner can normally be reached on 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Trost can be reached on 571-272-7872. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2683

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Kiet Doan
Patent Examiner



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